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A Preliminary Survey of the Spider Diversity in Rice Agro-ecosystem of Amboli Region, Sindhudurg District, Maharashtra

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Key word

Spiders, Arachnida, Agro-ecosystem, Prey Preference and Biological Pest Control.

Abstract

Spiders are a group of predators found in agro-ecosystems which feed voraciously on various insect pests. The present study was carried out in agro-ecosystem of Amboli region particularly, in rice field during June-October& January-May 2022-2023. This is the first attempt to evaluate diversity of spiders from rice agro-ecosystem. We recorded 10 families and 20 genera & 20 species of spiders. There is no previous study of spiders from agro ecosystem of Amboli Ghat

Introduction

Spiders are one of the most diverse groups of terrestrial arthropods, with over 50,000 described species globally, representing nearly 130 families (World Spider Catalog, 2024). They play an integral role in maintaining ecological balance as both predators and prey, making them key contributors to ecosystem functioning. Spiders are natural pest controllers, regulating populations of agricultural and forest pests, thereby supporting biodiversity conservation and sustainable agricultural practices (Nyffeler and Birkhofer, 2017). Globally, spider diversity has been widely studied to understand evolutionary patterns, biogeography, and ecological interactions. (Cardoso *et al.,* 2011) Their sensitivity to environmental changes makes them reliable bio-indicators for monitoring habitat quality and the impacts of climate change (Cardoso *et al.,* 2011). India, with its vast range of habitats from tropical rainforests to arid deserts, hosts a rich and understudied spider fauna, providing

opportunities for regional biodiversity assessments and conservation efforts (Sebastian and Peter, 2009). Spiders are natural pest controllers, regulating populations of agricultural and forest pests, thereby supporting biodiversity conservation and sustainable agricultural practices (Nyffeler and Birkhofer, 2017). Their sensitivity to environmental changes makes them reliable bio-indicators for monitoring habitat quality and the impacts of climate change (Cardoso *et al.,* 2011).

Rice is historically cultivated in places with abundant water (e.g., monsoonal Asia) and consequently has a larger water footprint than most of the major cultivated crops, utilizing 2 to 3 times additional water than moorland crops (Bouman, 2007; Mekonnen and Hoekstra, 2011). The majority of the rice is produced under incessant or sporadic flooding, e.g., alternate wetting and drying (P Belder*et al.,* 2004).

Rice is the staple food to more than half the global population, providing about 25% of global human energy consumption per capita and about 16% of protein (GRiSP, 2013). Globally, calories from rice have been steadily increasing from 391 kcal in 1961 to 541 kcal per person per day in 2013. In the past decade, much of this growth has been from Africa, but Asia continues to produce and consume the most calories from rice at 780 kcal per person per day compared with 238 in Africa (FAO, 2016)

Being semiaquatic, paddy fields are ideal for diverse biological organisms by offering shelter, food, breeding, and nesting habitat. The biological diversity is prejudiced by moisture and nutrient gradients within the rice fields. (Bambaradeniya and Amerasinghe, 2004; Norton *et al.,* 2010) While agronomic practices in rice systems vary widely, paddy fields are known to support an array of life, both fauna and flora. Invertebrates, including arthropods, crustaceans, micro-crustaceans, mollusks, and nematodes, inhabiting the vegetation and water dominate the fauna in paddy soil habitats (Bambaradeniya and Amerasinghe, 2004; Norton *et al.,* 2010 In the survey conducted in Kurunegala District in Sri Lanka, 495 invertebrate species, mostly arthropods, 103 vertebrate species, and 82 species of macrophytes were recorded in rice fields (Edirisinghe and Bambaradeniya, 2010). In the Philippines, spider diversity was greater in irrigated lowland followed by rainfed lowland while rainfed upland had the lowest with a Shannon diversity index of 2.72, 2.22, and 1.98, respectively (Burkhard*et al.,* 2015). A survey conducted in India it was observed that 1130 spiders belonging to 92 species, 47 genera, and 16 families were present in irrigated rice systems at different elevation in two cropping seasons (Sebastian *et al.,* 2005). Species richness and diversity was higher in lowlands than high and midland areas. Rice straw provides substrate to promote presence of invertebrates that decompose the straw (Schmidt *et al.,* 2015), which in turn enhance nutrient cycling in paddy soils. This paper records the spider diversity in rice agro-ecosystem of Amboli Region, Sindhudurg District, Maharashtra.

Materials and Methods

Study area:

The present study was carried out in agro-ecosystem of Amboli region particularly in rice field during the June-October and January-May 2022-2023 (Figure 1). Mostly spiders are nocturnal as well as diurnal hence, sampling was conducted from 6:00 to 9:00 am and 7:00 pm to 1:00 am. Weekly collection and observation was done.

Methodology

11 villages covered,and 15 rice field were sub-sampled. Field size aas about 10-20 Ha and total area of fields was about 30 sq. km area.

Spider collection was done by active search and line transacts method. Spiders were hand collected from ground level to the level of the top of rice sapling, including web-building spiders and free-living spiders on the foliage and stems of rice. Collected specimens were transferred to 70% alcohol. We received permission from PCCF Nagpur.

The identification of adult spiders was done up to the family, genus, and species level, by examination of external genitalia. Sexes were matched by color pattern and somatic features. Identification was done based on morphometric characters of various body parts (Sebastian 2009). A detailed taxonomic study was carried out based on the various keys and catalogues and other relevant literatures (World Spider Catalog, 2024).

Identification and photography were done with help of Al microDSC-88 stereo-zoom Trinocular microscope with attached camera and process by using Bio wizard software. Genital was excised with help of sharp pointed entomological needles and cleared in

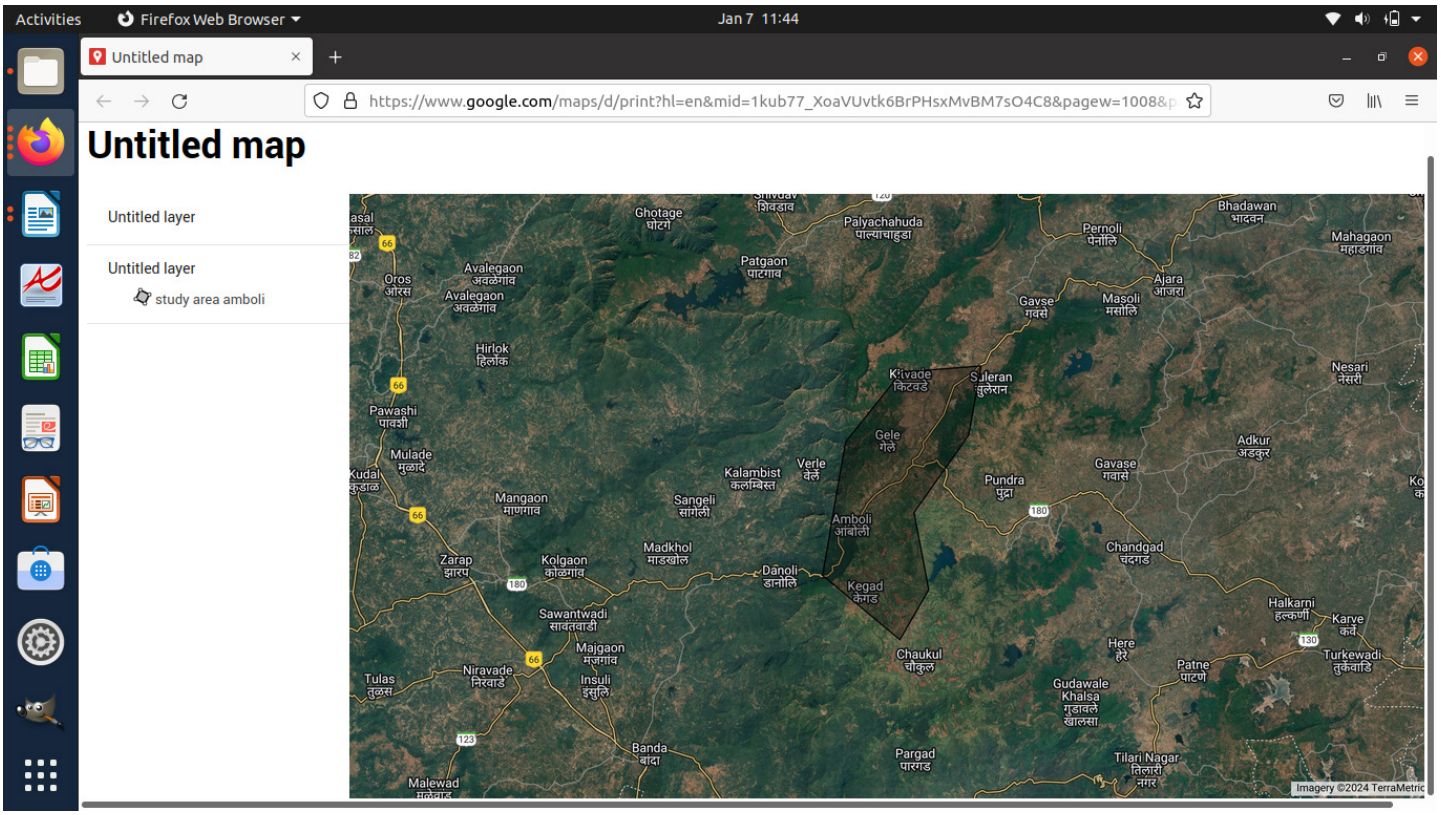


Figure 1: Map of study area

10% KOH. To the best of our knowledge no spraying of pesticides were done.

Results and Discussion:

In the present survey we recorded 10 different families, 20 genera and 20 species of spiders. These included Web-builders (Araneidae, Theridiidae, Linyphiidae, and Tetragnathidae) and active hunters (Lycosidae, Oxyopidae, Thomisidae, Gnaphosidae, Salticidae and Clubionidae,) which do not build webs but hunt using speed, vision, or ambush.

The coexistence of both functional groups ensures that spiders can exploit prey in different vertical strata of the ecosystem from canopy-level to ground-level and across various times of the day and night.

The population of spiders from Araneidae family was highest, followed by Theridiidae, Salticidae and Oxyopidae, whereas, Linyphiidae, Tetragnathidae, Lycosidae Clubionidae, Gnaphosidae and Thomisidae had minimum number of spiders**.** Araneidae and Theridiidae are web builders have space and support to construct webs and can feed on wide variety of insects from fields. So also, most of the time paddy fields are filled with water so less scope for ground spiders for their movements as a result their population sized is fever that that of web builders.

Table no. 3: Generic Diversity of spider from rice fields in Amboli

Sr. No	Family	Genus
1	Araneidae Clerck, 1757	5
2	Clubionidae Simon, 1878	1
3	Gnaphosidae Banks, 1892	1
4	Oxyopidae Thorell, 1869	1
5	Linyphiidae Blackwall, 1859	2
6	Lycosidae Sundevall, 1833	3
7	Salticidae Blackwall, 1841	3
8	Tetragnathidae Menge, 1866	1
9	Theridiidae Sundevall, 1833	2
10.	Thomisidae Sundevall, 1833	1

The species diversity of spiders was highest in Araneidae family followed by Lycosidae, Salticidae and Linyphiidae and Theridiidae family, Clubionidae,

Table no. 1: Spider families and species from rice fields from Amboli region.

Sr. No	Family	Species
1	Araneidae Clerck, 1757	1. *Neoscona theisi* (Walckenaer, 1841) *2. Argiope anasuja* Thorell, 1887 *3.* Araneus detrimentosus (O. Pickard-Cambridge, 1889) *4. Larinia phthisica* (L. Koch, 1871) *5. Cyclosa insulana* (Costa, 1834)
2	Clubionidae Simon, 1878	*6. Clubiona bilobata* Dhali, Roy, Saha & Raychaudhuri, 2016
3	Gnaphosidae Banks, 1892	*7. Zelotes poonaensis* Tikader & Gajbe, 1976
4	Oxyopidae Thorell, 1869	*8. Oxyopes hindostanicus* Pocock, 1901
5	Linyphiidae Blackwall, 1859	*9. Neriene macella* (Thorell, 1898) *10. Linyphia sikkimensis* Tikader, 1970
6	Lycosidae Sundevall, 1833	*11. Pirata punctipes* (Gravely, 1924) *12. Evippa banarensis* Tikader & Malhotra, 1980 *13. Alopecosa pulverulenta* (Clerck, 1757)
7	Salticidae Blackwall, 1841	14. *Phintella vittata* (C. L. Koch, 1846) 15. *Plexippus paykulli* (Audouin, 1826) 16. *Hasarius adansoni* (Audouin, 1826)
8	Tetragnathidae Menge, 1866	*17. Leucauge decorata* (Blackwall, 1864)
9	Theridiidae Sundevall, 1833	*18. Theridion melanostictum* O. Pickard-Cambridge, 1876 *19. Theridula gonygaster* (Simon, 1873)
10	Thomisidae Sundevall, 1833	*20. Thomisus daradioides* Simon, 1890

Table no. 2: Family-wise population of spiders from rice fields from Amboli

Sr. No	Family	Number of individuals were collected
1	Araneidae Clerck, 1757	48
2	Clubionidae Simon, 1878	01
3	Gnaphosidae Banks, 1892	01
4	Oxyopidae Thorell, 1869	14
5	Linyphiidae Blackwall, 1859	05
6	Lycosidae Sundevall, 1833	04
7	Salticidae Blackwall, 1841	11
8	Tetragnathidae Menge, 1866	05
9	Theridiidae Sundevall, 1833	17
10	Thomisidae Sundevall, 1833	01
	Total	**117**

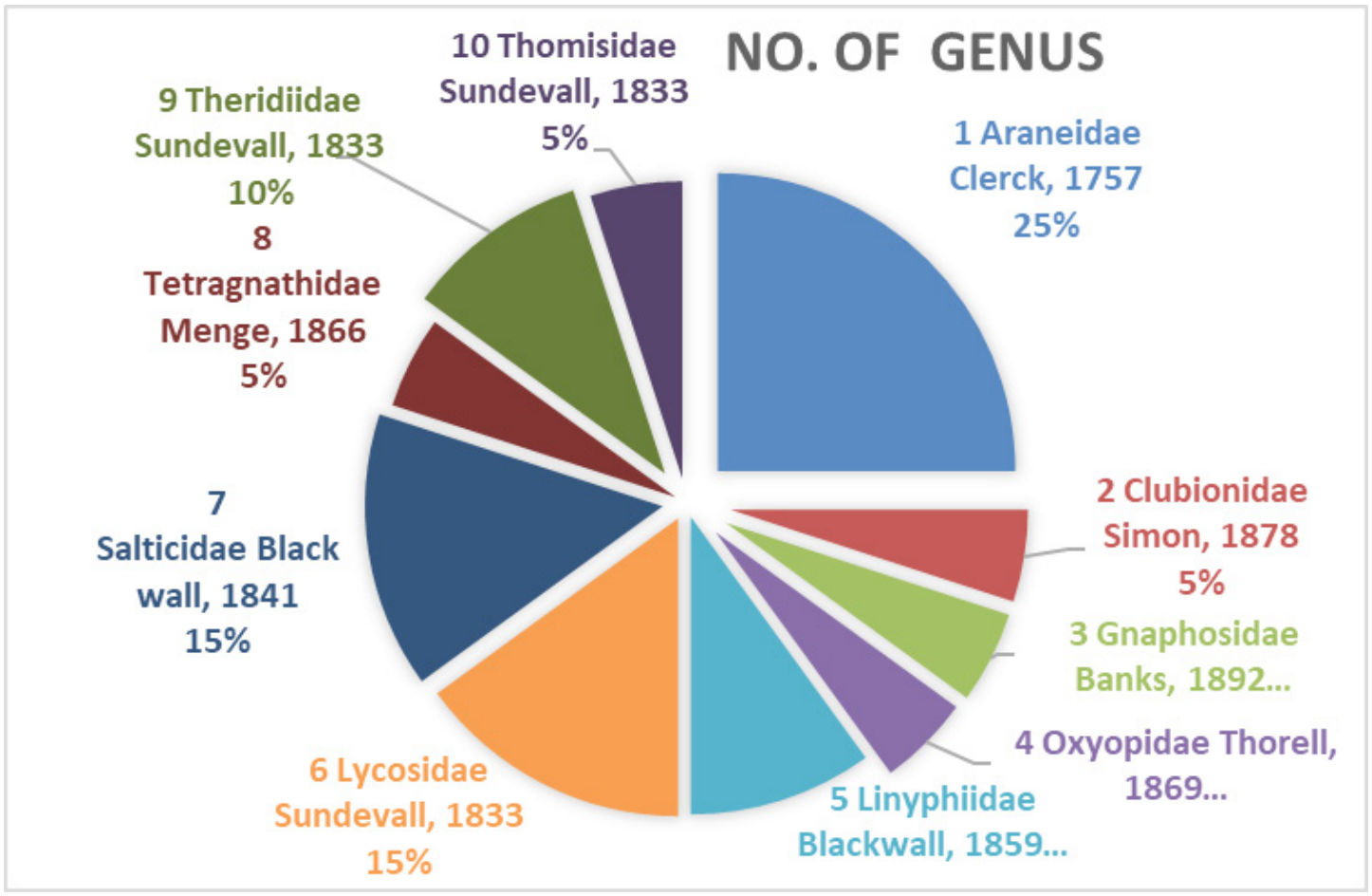


Figure no. 2 Diversity of spiders from rice crop field

Gnaphosidae, Oxyopidae, Tetragnathidae and Thomisidae had only one genus each.

A total of 117 spider individuals were collected and identified, representing 10 families 20 genera and 20 species. The family Araneidae emerged as the most dominant, with 48 individuals, contributing 50% of the total collection. It was also the most genus-rich family with five distinct genera: *Neoscona*, *Argiope*, *Areneus*, *Larini*, and *Cyclosa*. These spiders are commonly known as orb-weavers and are known for constructing symmetrical, wheel-shaped webs. Their dominance is not surprising, as rice fields offer numerous vertical structures such as rice stalks and leaf blades that provide ideal web-anchoring sites. Studies by Sebastian and Peter (2009) have documented similar dominance of Araneidae in other agroecosystems across India. Following Araneidae, Theridiidae was the second most common family, with 17 individuals representing two genera: *Theridion* and *Anelosimus*. These spiders construct irregular, sticky cobwebs in lower vegetation strata and often prefer undisturbed corners of fields. Their substantial presence reflects the suitability of rice crop microhabitats for their web structures and hunting strategies. The numerical dominance of Araneidae (48 individuals) suggests a favorable structural and prey environment. Orb-weavers require stable web-anchoring sites and a constant influx of aerial prey conditions that are well met in rice fields, especially during the flowering and grain formation stages when insect activity peaks. Theridiidae's (17 individuals) reflects its adaptability to cluttered or shaded environments often found at the base of rice plants or in the field margins. *Anelosimus* species, for instance, are known for their communal web-building behavior, which may enhance their prey capture efficiency in dense vegetation (Nyffeler & Birkhofer, 2017). The presence of *Oxyopus* and other lynx spiders shows that open spaces and leaf surfaces are used actively for patrolling prey. These spiders are diurnal and depend heavily on vision. Their abundance points to a high potential for

pest suppression in the active daylight period when herbivorous insects are feeding (Riechert & Lockley, 1984). The relatively low number of Lycosidae might reflect either under-sampling of the ground layer or seasonally varying populations. Despite being fewer in numbers, their ecological role is pivotal in ground-level pest regulation, particularly in controlling nymph stages of rice hoppers and soil-dwelling pests

The Oxyopidae family, commonly referred to as lynx spiders, was represented by 14 individuals, all belonging to the genus *Oxyopus*. These are active hunters that do not rely on webs but instead stalk and ambush prey. Their presence is beneficial from an agronomic perspective, as they prey on a wide range of herbivorous insects, many of which are pests of rice (Riechert& Lockley, 1984). Linyphiidae, the sheet weavers, contributed 5 individuals and was represented by two genera: *Crigone* and *Linyphia*. These spiders construct horizontal sheet-like webs close to the ground and are typically effective against smaller flying insects. Their appearance in the samples indicates the role of under-canopy and ground-level microhabitats in sustaining spider diversity (Sunderland, 1999). The ground-hunting Lycosidae family (wolf spiders) was found in modest numbers, 4 individuals belonging to three genera: *Pirata*, *Pardosa*, and *Alopecosa*. These spiders are fast-moving predators that do not spin webs, and their hunting strategy involves visual cues and ambush tactics. Although not as abundant as Araneidae or Theridiidae, their role in pest regulation at the soil level is invaluable. Three families — Clubionidae, Gnaphosidae, and Thomisidae — were represented by only a single individual each. The genera recorded were *Clubiona*, *Zelotes*, and *Thomisus*, respectively. Despite their limited numbers, these spiders are ecologically significant. *Clubiona* species are typically nocturnal and live in silken retreats, *Zelotes* are active ground predators, and *Thomisus* species are ambush predators often found on flowers, lying in wait for prey (Uetz&Eiben, 1999). The diversity of spiders reported in this study aligns with findings from similar agroecosystem surveys across India and Southeast Asia. For instance, Sebastian and Peter (2009) reported comparable genus richness in Kerala rice fields, while Nyffeler and Birkhofer (2017) emphasized the importance of spiders in regulating global insect populations estimating that spiders consume between 400–800 million tons of prey annually. Moreover, Uetz and Eiben (1999) highlighted how structural complexity in habitats such as rice paddies enhances spider diversity by providing microhabitats, shelters, and diverse prey options. Our results support this claim, given the observed richness of genera across different web-building and hunting strategies.

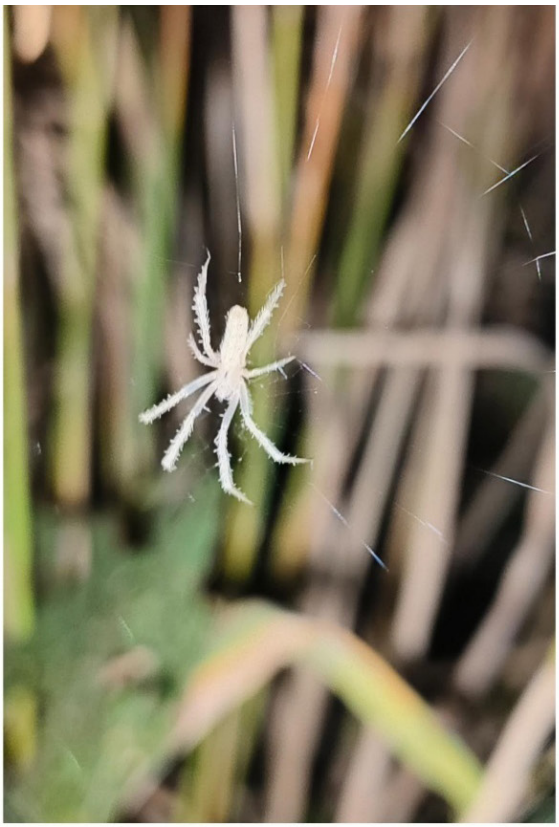
Rice fields offer a unique structural environment with a high degree of vertical layering. During peak growth phases, rice plants can reach over a meter in height, offering web-building opportunities at multiple levels. Leaf sheaths, stems, and panicles serve as web supports, while the flooded ground layer and field edges support both web-building and cursorial spiders. Moreover, the Amboli region, known for its high rainfall and humidity creates favorable conditions for moisture-loving spider species. Absence of chemical usage in traditional rice cultivation in this region may also contribute to a healthier arthropod community by reducing pesticide-induced mortality. Seasonal crop growth stages also influence spider abundance and diversity. Spiders tend to peak during the mid to late stages of crop growth, when prey density is high due to the presence of plant-feeding insects such as leafhoppers, planthoppers, and stem borers (Sunderland, 1999). The timing of this study likely coincided with such a period, explaining the relatively high spider abundance and diversity. Frogs were also present in the fields. The findings of this study have direct implications for sustainable agriculture and integrated pest management (IPM). Spiders are generalist predators that feed on a wide array of insect pests. Their presence in large numbers can reduce pest populations naturally, thereby reducing reliance on chemical pesticides (Riechert& Lockley, 1984). Furthermore, the presence of multiple functional groups (e.g., web-builders and hunters) ensures round-the-clock and multi-layered pest suppression. For instance, while orb-weavers control flying pests during the night, lynx spiders and wolf spiders target mobile prey during the day. This temporal and spatial complementarity enhances the resilience of the pest control system. Promoting spider-friendly practices such as reduced pesticide usage, maintaining field margins with native vegetation, and preserving natural water channels can support spider conservation. In return, farmers benefit from reduced pest pressure and improved crop health.

While the study presents strong evidence of high spider diversity in Amboli rice fields, some limitations

Paddy field

Figure 3 : Paddy fields in during monsoon

Larinia phthisica



Larinia phthisica

Neoscona theisi

Leucage decorata

Figure 4 : Spider species recorded from study area.

Larinia phthisica

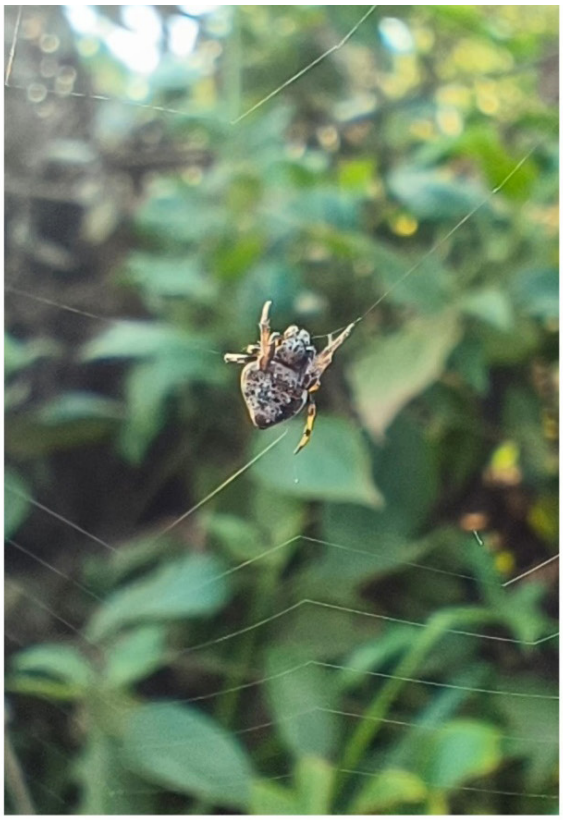
Araneus dtrimentosus

Leucage decorata

Neriene macella

Figure 5 : Spider species recorded from study area.

Neoscona theisi



Eriovixia excelsa

Argiope aemula

Linyphia sikkimensis

Figure 6 : Spider species recorded from study area.

Oxyopus hindostanicus

Oxyopus hindostanicus

Pirata punctipes

Oxyopus hindostanicus

Figure 7 : Spider species recorded from study area.

Pirata punctipes

Oxyopus hindostanicus

Oxyopus hindostanicus

Pirata punctipes

Figure 8 : Spider species recorded from study area.

Paddy field

Figure 9 : Paddy fields in summer

should be acknowledged. The survey was conducted over a single season and may not account for seasonal variations in spider populations. Some families such as Salticidae (jumping spiders) were not represented, possibly due to sampling limitations or specific habitat preferences. Future research should consider seasonal monitoring, species-level identification using molecular tools, and behavioral studies to better understand spider-prey dynamics. Quantifying the actual pest reduction due to spider predation would also strengthen the argument for using spiders as natural biocontrol agents.

Conclusions

A total of 117 individuals were collected, from rice fields of the Amboli region representing 10 families, 20 genera and 20 species, which demonstrates the rich biodiversity present in these agro-ecosystems. Among the collected specimens, the family Araneidae was found to be dominant, both in terms of the number of individuals and genera. This suggests that orb-weaving spiders are highly adapted to rice field habitats, likely due to the structure of the crop that provides suitable web-building sites. Other notable families included Theridiidae, Oxyopidae, Salticidae and Linyphiidae. The presence of both web-building and free-living hunting spiders indicates a healthy and balanced arthropod community.The low numbers recorded from families like Gnaphosidae, Clubionidae, and Thomisidae may reflect specific habitat preferences, time of sampling, or limitations in sampling techniques. Overall, this study reinforces the idea that rice fields in addition to being grain-producing systems are microhabitats that support rich and functionally important biodiversity. Sustainable agricultural practices that protect and promote such natural biodiversity can lead to healthier environments and more resilient farming practices. Studies with broader seasonal coverage, advanced taxonomic tools, and ecological modeling would help to further understand the dynamics of spider populations and their interactions with crop pests. Such knowledge is essential to designing environmentally friendly pest management strategies and ensuring the long-term sustainability of agriculture.

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Authors Contribution

All the three authors have equally role in fieldwork and specimen collection, the morphological identification of the spiders, data analysis, interpretation and writing the manuscript.

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First Report of Perilla Leaf Moth (*Pyrausta phoenicealis* Hübner, 1818) from Rajasthan, India

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Abstract

Perilla Leaf Moth (*Pyrausta phoenicealis* Hübner, 1818) belongs to order Lepidoptera, super family Pyraloidea, family Crambidae, and subfamily Pyraustinae. Distribution of this moth species has been reported in different parts of the country, including Gujarat, West Bengal, Maharashtra, Tamil Nadu, Madhya Pradesh, Jharkhand, Andhra Pradesh, Karnataka, Delhi, Uttarakhand, Chhattisgarh and Kerala. Present observation is the first report of this species from the Rajasthan state. Adult individuals of Perilla Leaf Moth usually have 1.6 cm wingspan. External appearance of forewings is golden-yellowish with reddish antemedial and postmedial lines that curve inward, while hind wings are yellowish-grey with a black postmedial line.

Perilla Leaf Moth individual was recorded from Urban habitat of Bhilwara district, particularly Tilak Nagar and Nehru Talai area.

Keywords

Perilla Leaf Moth, *Pyrausta phoenicealis,* Crambidae, Rajasthan, Lepidoptera.

Introduction

Moths belong to order Lepidoptera, exhibit a worldwide distribution in different habitats, and play a crucial role in ecosystem by offering numerous ecosystem services, such as pollination, food for birds, and insectivorous mammals, as well as maintaining high diversity at the global level (Gadhikar *et al.,* 2015; Uniyal *et al.,* 2016). Variations in diversity, abundance and distribution also reflect changes in the biodiversity conservation levels. Moths are widely recognized as bio-indicator species for the assessment of the health

Table 1 : Previous sightings of Perilla Leaf Moth *Pyrausta phoenicealis* Hübner, 1818 in India. (Source - http://www.mothsofindia.org)

S.No.	State	Date of Reporting	Observers
1.	Gujarat	09.03.2012	Anne Giry Balaram
2.	West Bengal	26.07.2014	Asim Mitra
3.	Maharashtra	26.07.2014	Janathan Dsilva
4.	Tamil Nadu	18.11.2015	Jonathan Dsilva
5.	Madhya Pradesh	11.10.2016	Rachit Singh
6.	Jharkhand	18.09.2019	Roger C. Kendrick
7.	Andhra Pradesh	06.11.2019	R. Bhanumathi
8.	Karnataka	14.11.2019	Rohit Girotra
9.	Delhi	25.08.2020	Sourabh
10.	Uttarakhand	02.06.2021	Sanjay Sondhi
11.	Chhattisgarh	09.07.2021	Gulshan Kumar
12.	Kerala	06.03.2022	Arun Lal

of particular habitats or ecosystems (Bachand *et al.,* 2014). Numerous of studies have been carried out on the diversity, distribution and occurrence of moth species in Rajasthan (Koli and Prajapati, 2021; Savita and Trigunayat, 2023; Jain and Verma, 2023; Sharma, 2024; Tripathi *et al.*, 2025 a&b). However, Perilla Leaf Moth (*Pyrausta phoenicealis*) species have not been reported previously from Rajasthan state. Therefore, present observation is important record for the state of Rajasthan (Tilak Nagar, Bhilwara).

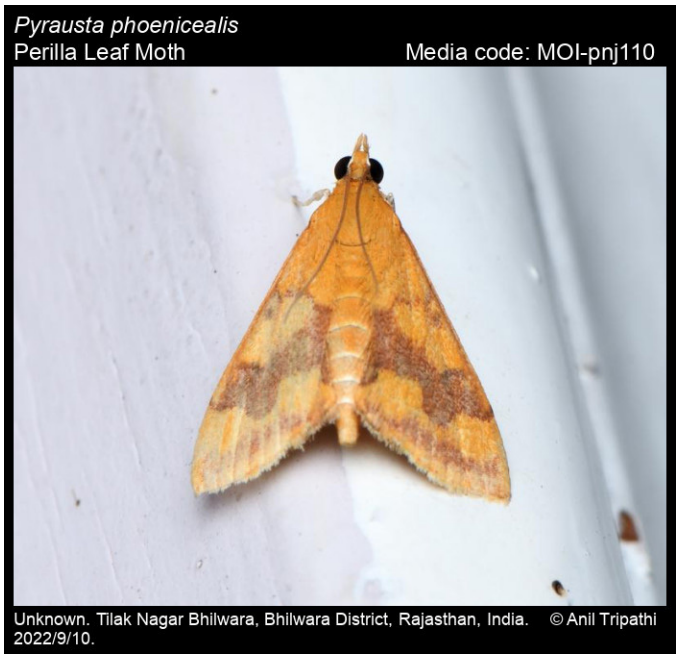
Materials and Methods

During a field visit to the urban area of Bhilwara district, we sighted Perilla Leaf Moth (*Pyrausta phoenicealis*). Species identification and its distribution was confirmed from the online data base of moths by using "Moths of India" and "iNaturalist" website. Photographs of the moth species were taken using Nikon P500 camera.

Result and Discussion

During a field survey on September 10, 2022, we observed male Perilla Leaf Moth species from the Tilak Nagar area of the Bhilwara district. Subsequently, on May 11, 2025, this species was observed for the second time in Nehru Talai area of Bhilwara district (Figure 1 & 2). Adult moth of this species has a 1.6 cm wingspan. Body morphology is characterized by forewings of golden-yellowish colour with reddish antemedial and postmedial lines that curve inward. Hindwings are yellowish-grey with a black postmedial line. Larvae are reddish-violet with prominent body spots and create tent-like shelters by binding leaves together with silk. This moth feeds on the Perilla, fruit mint, and knob weeds, and also feeds on Lamiaceae mint plants such as *Hyptis pectina* and *Coleus* species.

Perilla Leaf Moth is distributed worldwide, including Asia, Africa, America and Australia (Poltavsky *et al.,* 2018). In India, this species has been previously documented in various states including Gujarat, West Bengal, Maharashtra, Tamil Nadu, Madhya Pradesh, Jharkhand, Andhra Pradesh, Karnataka, Delhi, Uttarakhand, Chhattisgarh, and Kerala (Table 1) (Sondhi *et al.,* 2025). After a literature survey and an online database related to moth distribution, we claim that the present study provides the first record of this species from Rajasthan state.



Figures 1 and 2: Perilla Leaf Moth *Pyrausta phoenicealis* Hübner, 1818, reported from Bhilwara, Rajasthan, India

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Greying of plumage in Ashy Prinia (*Prinia socialis*) from Nasirabad, Rajasthan

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Key words: Plumage anomaly; progressive greying; pigment loss; greying mutation.

Abstract

Progressive greying of plumage is a relatively rare form of plumage aberration in birds, often caused by a gradual loss of melanocytes responsible for pigment production. This report documents a field observation of an Ashy Prinia (*Prinia socialis*) displaying noticeable greying of feathers, an unusual deviation from its normal coloration. The condition, which appears to develop over time rather than from birth, may have both genetic and age-related origins. This study outlines the appearance, behavior, and ecological context of the affected individual and briefly discusses the significance of such pigment loss in wild avifauna.

Introduction

Bird plumage serves critical ecological roles, including camouflage, mate attraction, and species recognition (Mason & Bowie 2020). Deviations from typical coloration is termed as plumage aberrations and can result from genetic, environmental, or pathological causes (Guay *et al*. 2012). Progressive greying, also known as greying, is characterized by a gradual reduction or loss of melanin in feathers over time due to the decline or dysfunction of pigment-producing cells (van Grouw 2018).

The Ashy Prinia is a small, active warbler widely distributed across the Indian subcontinent (Grimmett and Inskipp 2018). Its usual plumage features a slate-grey crown and upperparts, rufous flanks, and a white underbelly (Grimmett and Inskipp 2018). This study describes an individual with unusual plumage, presumed to be the result of progressive greying, observed under natural field conditions.

Materials and Methods

On 29 September 2024, an Ashy prinia (*Prinia socialis*) with distinctive patchy plumage was sighted at outskirts of Nasirabad, Rajasthan (26°15'49.6"N 74°46'48.0"E; elevation 413m above sea level). The bird was encountered in semi-arid plains a mosaic of scrubland and open grass with interspersed agricultural plots (Choudhary *et al*. 2025a) a typical Ashy Prinia habitat. The region supports a high density of warbler species, providing an ideal setting for monitoring individual variations (Choudhary *et al*. 2022; Das *et al*. 2022; Choudhary *et al*. 2024). The area is known for its rich avifaunal diversity and provides suitable habitats in form of open canopy trees, bushy undergrowth and sparse grasslands for grassland and woodland species. The individual was monitored in the field using close-range binoculars and high-resolution photography. The field observations were taken on 29 September 2024 at 9 am and it was observed once using Olympus 10x50 binocular and photographs were taken from Nikon P1000 camera. The species' descriptive field identification remarks were noted (Grimmett & Inskipp 2018). The naming of the white plumage followed the identification key for color aberrations previously described (Mahabal *et al*. 2015).

Results

The aberrant Ashy Prinia was sighted on September 29; 2024. Unlike the species' standard ashy-grey upperparts, this bird showed extensive white patch on the mantle and an uneven pattern caused due to whitening of feathers on head. The tail feathers retained normal pattern. The greying appeared uniform, that suggests a systemic condition rather than feather wear or staining. Behaviourally, the bird was active, foraging in typical low vegetation, vocalizing, and interacting normally with others. The pale coloration was not consistent with juvenile plumage or molting and did not resemble leucism or albinism. Rather, it pointed toward a gradual melanin loss characteristic of progressive greying.

Discussion

Progressive greying in birds is typically the result of melanocyte depletion over successive molts, and unlike congenital pigment disorders (e.g., albinism), greying tends to emerge with age or due to specific genetic factors (Van Grouw 2021). This condition has been reported in a few species (Camacho *et al*. 2022; Jangir *et al*. 2024a; Machado-Teixeira and Dias 2025), but field documentation remains sparse, especially in small passerines like the Ashy Prinia.

Though the condition is unlikely to have immediate effects on survival, lighter plumage may alter thermoregulation, social behavior, or predator avoidance (Mahabal *et al* 2015), particularly if it is progressive. That the individual behaved and interacted normally suggests minimal short-term ecological impact. However, if such aberrations become more frequently observed, they could signal underlying environmental stress or evolving genetic trends in local populations. Several studies have reported color aberrations in various species form this region including brown plumage aberration in Indian Pied Starling (*Gracupica contra*) (Jangir *et al*. 2023), Erythrism in House Sparrow (*Passer domesticus*) (Jangir *et al*. 2024b) and Intersex plumage in Plum-headed Parakeet (*Psittacula cyanocephala*) (Choudhary *et al*. 2025b). This case adds to a growing but still limited body of observations on naturally occurring plumage variations/mutations in wild birds, and it highlights the importance of detailed field observation in uncovering subtle phenotypic anomalies.

Declaration of authors' contribution:

Mayank Sharma conceptualized and curated the fieldwork, Gaurav Panwar and Kalyan Prasad Khandelwal contributed by Review of literature, writing draft. Divaker Yadav and Pawan Singh validated the findings and helped in investigation and fieldwork.

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Table 1 | Comparative Summary of color aberrations.

Possible Aberration	Appearance	Notes	Likelihood of this aberration in observed individual
Albinism	Completely white plumage; pink (unpigmented) eyes, legs and bill	No color loss in eyes. Normal plumages.	Declined
Leucism	Partial or patchy loss of all pigments: white, pale or patchy light areas on an otherwise normal-colored bird; normal eye color	Only a single patch of discoloration. Normal eye color.	Maybe
Melanism	Excessive dark (black or very dark brown) plumage overall or in patches	No gain of dark color in recorded individual.	Declined
Ino	Ruddy, pinkish or pale buff replaces normal black or dark pigment; eyes often red or pinkish ("red-eye" mutation)	No pale and buff color and no red/pinkish eye.	Declined
Flavinism	Distinct yellow coloration often with pigmented eyes (leucism)	No yellow coloration	Declined
Brown	Uniformly muted brown where black should be overall "washed-out" look e.g., bird appears chocolate brown.	No brown color formation.	Declined
Progressive Greying	Feathers gradually turn pale gray or white as the bird ages.	Uniform pigmentation loss at Mantle (The area between the wings on the bird's back).	Accepted

Figure 1 | Observed Ashy prinia with Progressive greying.

Conflict of interest: Authors declare no conflict of interest.

Breeding record of Black-breasted Weavers (*Ploceus benghalensis*) at Moharli wetland near Tadoba-Andhari Tiger Reserve (TATR), Chandrapur, Maharashtra, India

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Study area

Irai Dam banks and marshy area, Moharli village, near Tadoba Andhari Tiger Reserve , Chandrapur, Maharashtra.

Habitat

Irai Dam backwaters, a fresh water expanse, on grassy banks and marshy areas (wetland) on Chandrapur Moharli road. The habitat extends between the tar road and the backwaters. There are two types of grasses Padyal grass *Paspalum dilatatum* and Vetiver grass *Chrysopogon zizanioides* in the region where the Black-breasted Weavers (*Ploceus benghalensis*) built their intricately woven nests using the grass blades.

Distribution

The Black-breasted Weavers also known as Bengal Weaver and Black-throated Weaver has a known distribution in Northern India (Indo-Gangetic plains, from Punjab and Gujarat to Assam and West Bengal and from Odisha, Bengaluru and Chennai), Nepal, Bangladesh, China, Bhutan and Pakistan. A population has been introduced in Quatar (BirdLife International). The present distribution is disjunct and this breeding record is important since it is away from the regular extent of this species and it is likely that the species could be polytypic due to allopatric distribution (Menon *et al*. 2022). The conservation status is Least Concern.

Breeding behaviour in study area:

Date of commencement of breeding:

On 12th August 2024, two pairs of the weavers were recorded perching on the grass blades. On 24 August 2024, the weavers were seen in the low-lying areas of the marshy banks where the Vetiver grass was in yellow

flowering. The males were seen to bring together several stems of the grass and weave their nests using the blades of two grass species *Chrysopogon zizanioides* and *Paspalum dilatatum*. The were seen to weave the nests in a circular manner from the top to bottom. Initially and amazingly, a knot using grass blades was tied to a clump of grasses brought together by the weavers using their beak and feet and from this sturdy and stable apex a nest was woven. The males cut the adjacent tall grass blades with their beaks such that the nests became relatively visible and females could easily identify the nests in the grass clumps. However, this was at the cost of visibility to predators. It was noticed that when another male started weaving the nest close to the nest of the first male, the first male cut the nest attachment of the latter nest with its sharp break. It was also noticed that the black patch of feathers on the breast of the first male was much more prominent than that of the second male in that case. Initially, four nests were recorded adjacent to one another with a distance of about 18 to 24 inches. Males were seen to adorn their nests with red flowers and yellow flowers of adjacent grasses. Between the frenzied nesting activity, the males were seen perching on the blades of Padyal grass (*Paspalum dilatatum*). The females lacked the black breast patch and had a yellow eye-brow, The females inspected the nests and the males excitedly flew around them while fluttering their short round wings. Some males had black breast and chin while others had only black breast patch. It was observed that the males with white chin and black breast (probably sub-adults) assisted the males with black chin as well as breast (breeding adults) in nest building. The males were seen to drink water from the bottom of the grassland from the marshy area by hopping downwards along the long stems.

Population

Maximum number of 300 weavers were seen during the peak of breeding season on this grassy patch. The birds flew to the adjacent cropland during the breeding season from where they were seen to glean seeds of local grass species including the two grasses used for making the nests.

End of breeding season

The breeding was over by 24th December 2024 when the chicks were seen to fledge from the nests. Eventually the mixed flock of males, females, sub-adults and juveniles flew away incrementally towards the west side of the Irai dam.

Other avian species in the habitat

Ashy Prinia *Prinia socialis*, Zitting Cisticola *Cisticola juncidis*, Scaly-breasted munia *Lonchura punctulata* and Indian Silverbill *Euodice malabarica* were seen in the grassland patch where black-breasted weavers were breeding. The ashy prinia removed a grass blade from the weaver's nest and the male weaver chased it away.

Predatory species

Pallid Harrier (*Circus macrourus*), Western Marsh Harrier (*Circus aeruginosus*) and Indian Grey Mongoose (*Urva edwardsii*) visited the colony. On the feeding grounds away from the breeding area, Common Kestrel *Falco tinnunculus* was recorded.

Threats

It is occasionally hunted for food and kept as a pet in various places nationally and internationally. In the study area the species is protected since it is close to the TATR.

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Cover and Back Cover : Black-breasted weaver /Prateik Kulkarni

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